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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/679,397	10/07/2003	Nobuyuki Hokari	A8319.0026/P026	5471
24998	7590	01/09/2008		
DICKSTEIN SHAPIRO LLP 1825 EYE STREET NW Washington, DC 20006-5403			EXAMINER NGUYEN, TAM M	
			ART UNIT 1797	PAPER NUMBER
			MAIL DATE 01/09/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/679,397

Applicant(s)

HOKARI ET AL.

Examiner

Tam M. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6, 16 and 17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☒ Claim(s) 18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 21, 2007 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any

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evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-6, 16, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCollum et al. (3,948,755) in view of admitted prior art and either Koizumi et al. (JP-2003097290A) or Koizumin et al. (JP-2003090227A).

McCollum discloses a process for upgrading a heavy oil by contacting the heavy oil with water at a high temperature and pressure in the presence of a catalyst comprising a metal oxide to reduce metals (e.g., vanadium) and sulfur compounds in the heavy oil. McCollum also discloses that the water also contains a reaction accelerator (e.g., methyl alcohol). The process is operated at a temperature of from 600-900° F (the critical temperature of water) and at a pressure of about 4000 psi (27 MPa). It is noted that McCollum does not specifically disclose that the vanadium is scavenged in the form of vanadium oxide and or metallic compound and does not disclose that sulfur is scavenged in the form of a sulfate and/or a metal sulfide. However, the heavy oil is contacted with water at a high temperature and pressure as claimed. It would be expected that at least one vanadium and at least one sulfur compound produced in the process of McCollum would be in the claimed form. From Table 9-11, it is estimated that the product comprises less than about 2 ppm of vanadium. (See col. 3, line 56 through col. 4, line 18; col. 7, line 67 through col. 8, line 50; col. 9, line 65 through col. 10, lines 6; tables 2, 9; 10 and 11)

McCollum does not disclose that water is heated to 300 to 500 and pressuring to 10 MPa to 30 MPa before contacting with the heavy oil, does not disclose that the feedstock is a

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hydrocarbon heavy oil, does not disclose that water is subcritical water, does not disclose that the reforming oil can be used in a gas turbine, and does not disclose that the step of utilizing the heat exhaust gas from the gas turbine.

Both the JP references teach a process wherein heavy oil is passed into a gas turbine process. See abstract of both references.

Admitted prior art teaches that it is known that the exhaust heat gas from the turbine process can be used in the front or rear of exhaust gas heat exchanger. (See the present specification page 17, lines 15-20)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of McCollum by passing the heavy oil for a gas turbine as suggested by the JP references because the heavy oil of McCollum can be used for any purpose including in a gas turbine process.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of McCollum by utilizing a heavy oil as claimed because it would be expected that either liquid feed or solid feed can be successfully treated in the process of McCollum.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of McCollum by heating and pressuring the water as claimed because McCollum teaches that the process is operated at a temperature of from 600-900° F and at a pressure about 4000 psi (27 MPa). Therefore, it is affective to heat and to pressurize the water to the operating conditions before passing the water into the reaction zone.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of McCollum by operating the process of McCollum at subcritical water because McCollum teaches that it is not essential that the solvent phase be maintained at above its critical temperature. It is only essential that the fluid solvent be maintained at high enough pressures so that its density is high. Therefore, one of skill in the art would operate the process of McCollum at any condition including at either supercritical water or subcritical water as long as the operating pressure is high so that the solvent density is high.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of McCollum/Koizumi by utilizing the exhaust heat gas as taught by the admitted prior art because it known that utilization of exhaust gas heat contributes to the improvement of system working efficiency.

Response to Arguments (filed on 10/31/07)

The argument that although McCollum discloses in Example 55 that a maximum of 99% of vanadium can be removed from straight tar sands which results in a residual vanadium content of about 1.8 ppm, these values are based on a semi-continuous flow process, which is different from the claimed process is not persuasive. In the process of McCollum, a hydrocarbon feed is contacted with water at a high temperature and pressure in the presence of a catalyst comprising a metal oxide to reduce metals (e.g., vanadium) and sulfur compounds in the feedstock as claimed. Also, McCollum teaches that the process can be either continuous or semi-continuous. (See col. 27, lines 34-44). In example 44, vanadium is removed at about 96% from residual oil (heavy oil) comprising about 25 ppm which results in a product content about 2 ppm.

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The argument that the object of McCollum is the reformation of tar sands and not the heavy oil reformed as claimed is not persuasive. McCollum discloses that other hydrocarbon feeds can be employed in the process such as atmospheric residual oils and vacuum residual oil that are heavy oils.

The argument that neither Koizumi '290 nor Koizumi 227 states that any reformed fuel can be used in the process is not persuasive. Both the Koizumi references teach that a reformed oil can be used the turbine process. The examiner maintains that, in the processes of Koizumi, one of skill in the art would use a reformed oil from any sources including from the McCollum process. It is reminded that the process of McCollum produces a product content a low amount of vanadium as claimed.

Allowable Subject Matter

Claim 18 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

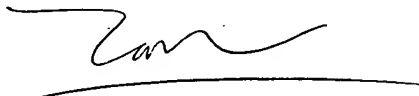
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tam M. Nguyen whose telephone number is (571) 272-1452. The examiner can normally be reached on Monday through Thursday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tam M. Nguyen
Examiner
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TN